

**WHAT IS CLAIMED IS:**

1. A low-pass filter, comprising:

a first element block having a first capacitive element;

5 a second element block having a resistive element and a power supply connected in series to the resistive element, one end of the second element block being connected to one end of the first element block, the other end of the second element block being supplied with a reference voltage;

a third element block having a second capacitive element, the third element  
10 block being connected in parallel to the second element block;

a first input terminal for receiving a first electric current, the first input terminal being connected to the other end of the first element block; and

a second input terminal for receiving a second electric current, the second input terminal being connected to a connection point of the first to third element blocks,  
15 the direction of the second electric current being the same as that of the first electric current, the magnitude of the second electric current being  $N$  times that of the first electric current (where  $N$  is a predetermined number),

wherein the low-pass filter outputs a voltage generated at the one end of the first element block.

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2. A low-pass filter, comprising:

a first element block having a first capacitive element, one end of the first element block being supplied with a first voltage;

a second element block having a voltage buffer circuit which receives a  
25 voltage generated at the other end of the first element block and a resistive element which

is connected in series to the output side of the voltage buffer circuit, one end of the second element block being connected to the other end of the first element block;

a third element block having a second capacitive element, one end of the third element block being connected to the other end of the second element block, the other  
5 end of the third element block being supplied with a second voltage;

a first input terminal for receiving a first electric current, the first input terminal being connected to the other end of the first element block; and

a second input terminal for receiving a second electric current, the second input terminal being connected to a connection point of the second and third element  
10 blocks, the magnitude of the second electric current being  $N$  times that of the first electric current (where  $N$  is a predetermined number),

wherein the low-pass filter outputs a voltage generated at a connection point of the second and third element blocks.

15 3. A low-pass filter, comprising:

a first element block having a first capacitive element, one end of the first element block being supplied with a first voltage;

a second element block having a resistive element and a power supply connected in series to the resistive element, one end of the second element block being  
20 supplied with a second voltage;

a third element block having a second capacitive element, the third element block being connected in parallel to the second element block;

a first voltage-current conversion circuit for converting a voltage generated at the other end of the first element block to an electric current;

25 a second voltage-current conversion circuit for converting a voltage

generated at the other end of the second element block to an electric current;

a first input terminal for receiving a first electric current, the first input terminal being connected to the other end of the first element block; and

a second input terminal for receiving a second electric current, the second  
5 input terminal being connected to a connection point of the second and third element blocks, the magnitude of the second electric current being  $N$  times that of the first electric current (where  $N$  is a predetermined number),

wherein the low-pass filter outputs the sum of the electric currents generated by the first and second voltage-current conversion circuits.

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4. The low-pass filter of claim 1 or 3, wherein the resistive element of the second element block is an internal resistor of the power supply.

5. The low-pass filter of claim 2, wherein the resistive element of the second element  
15 block is an internal resistor of the voltage buffer circuit.

6. The low-pass filter of any one of claims 1-3, wherein the resistive element of the second element block is a switched-capacitor circuit.

20 7. The low-pass filter of claim 2 or 3, wherein both the first and second capacitive elements are MOS capacitors.

8. A feedback system for feeding back an output clock generated based on an input clock such that the output clock has a predetermined characteristic, comprising:

25 a loop filter formed by a low-pass filter recited in any one of claims 1-3;

a charge pump circuit for generating the first and second electric currents which are to be input to the loop filter based on a phase difference between the input clock and the fed-back clock; and

output clock generation means for generating the output clock based on an  
5 output signal from the loop filter.